

## **REMARKS**

The specification has been amended by replacing paragraphs 0133 and 1051 in the published version of the present application. The present application is a national phase of PCT/CA2002/002031; the location of the paragraphs to be replaced is also provided in both the original PCT application and in the PCT application as amended during the international phase. Examined Claims 1-13 referred to in the outstanding Office Action of August 3, 2007 correspond to the claims of the published version of the present application rather than the claims amended during the international phase. In order to expedite prosecution Applicant's response and amendments are based upon examined claims 1 -13 shown in the published version of the present application.

Claim 11 was indicated in the Office Action to be allowable if amended to overcome the rejection under 35 USC 112, and it is respectfully submitted that claim 11 has been amended accordingly so as to be allowable.

### ***Oath/Declaration***

A supplemental signed Declaration is submitted herewith in compliance with the request in the Office Action.

### ***Drawings***

In response to paragraph 1 of the Office Action of August 3, 2007, paragraphs 0133 and 0151 of the published specification have been amended to include characters 712 and 210D.

In response to paragraphs 2 and 3 of the Office Action the drawings have been corrected to address the inconsistent use of characters 246B, 248B and 236B by submission of a Replacement Sheet of Figures attached hereto. Specifically, on Fig. 12a, 248B and 246B have been reversed so as to conform to the description and Fig. 13a and one of the instances of 236B has been deleted.

In response to paragraph 4 of the Office Action, it is respectfully requested that this basis for this objection be reconsidered and withdrawn. In the second preferred embodiment, several elements of the structure perform dual functions. For example, multilobe piston 204B also acts as the multilobe piston 204D for the air motor. Piston chamber 212B effectively represents the second compression stage 404. Similarly, piston chamber 212D effectively represents air motor 408.

### ***Claim Rejections – 35 USC § 112***

The claims have been amended so as to delete therefrom the impugned word “same”.

### ***Claim Rejections – 35 USC § 103***

The claims have been amended to improve clarity and better point out and distinctly claim the subject matter which the applicant regards as the invention. Substantively, the amendment consists of the substitution of a reservoir for the radiator initially recited in claim 1. For support, attention is respectfully directed to paragraph 0162 of the published version of the present application which specifically contemplates the substitution of a reservoir for the radiator (paragraph 0162 of the published patent application corresponds to the paragraph of original PCT application starting at page 22, line 25 and ending at page 23, line 16; and also corresponds to the paragraph of the amended PCT application at page 23, lines 4-28).

While this amendment is believed to render the 35 USC § 103 rejections of record moot, it is respectfully submitted that the claimed invention is not obvious in view of the prior art for reasons set forth below.

The invention as presently claimed comprises: a compressor; a reservoir adapted to receive pressurized air from the compressor; a combustor for

receiving fuel and combusting said fuel in a combustion process with the pressurized air to produce primary exhaust products; a positive displacement air motor adapted to be driven by the primary exhaust products to produce power and secondary exhaust products; and a positive displacement gas expander for receiving the secondary exhaust products and expanding said secondary exhaust products substantially adiabatically to produce tertiary exhaust products and power, wherein the compressor is adapted to, during the pressurization process, release air from the chamber for said combustion in a manner such that the pressure in the chamber during the pressurization process and the pressure of the primary exhaust products driving the air motor is at a substantially constant level at steady state conditions.

The cited patent to Takahashi teaches a pair of air motors [see column 2, lines 41-44], each air motor being fed by a combustion chamber [see column 4, lines 25-31]. Thus, Takahashi does not teach a positive displacement gas expander which is fed the exhaust products of an upstream air motor as claimed herein, but rather teaches an air motor which is fed the exhaust products of a secondary combustor, which combustor itself is fed the exhaust products of an upstream air motor. Moreover, it would not be obvious to modify Takahashi towards single-stage combustion [i.e. combustion occurring only between the second compressor and the first expander], since Takahashi teaches that the secondary combustion chamber B2 (which feeds his second air motor) is *indispensable* [see column 4, lines 64-67]. Thus, Takahashi teaches away from the claimed invention.

With regard to the cited patent to Sauder, one of ordinary skill in the art should readily appreciate that this motor is of the Atkinson type, which operates via explosive combustion, and thus is characterized by significant pressure spikes on the expansion side. Thus, Sauder does not teach, as claimed herein, a motor wherein the pressure of the primary exhaust products driving the air motor is at a substantially constant level at steady state conditions. Moreover, Sauder

specifically teaches, at column 8, lines 14-19, that combustion is separated from the cylinders, thereby allowing ignition of the fuel mixture to take *place only after maximum compression* has been reached. From these teachings, it is manifest that the Sauder engine does not embody, and would not be modified by one of ordinary skill in the art to embody, an apparatus wherein the pressure in the chamber during the pressurization process is at a substantially constant level at steady state conditions. Furthermore, on the matter of the reservoir, Sauder *emphasizes*, at column 8, lines 9-14, that the cylinders are segregated from one another *only* by virtue of the connecting pipes, thereby *teaching away from* the inclusion of a separate reservoir as claimed herein.

The other cited art does not meet the deficiencies of Takashi and Sauder and/or would not be combined therewith due to teaching away.

For the above reasons, all of the claims currently pending in this application are respectfully submitted to be allowable. If the Examiner has any further questions or concerns, the Examiner is invited to contact the Applicant's undersigned attorney.

Respectfully submitted,

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